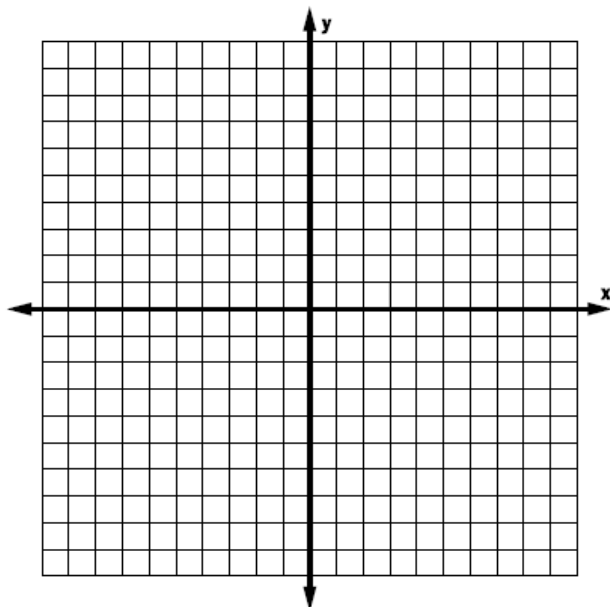
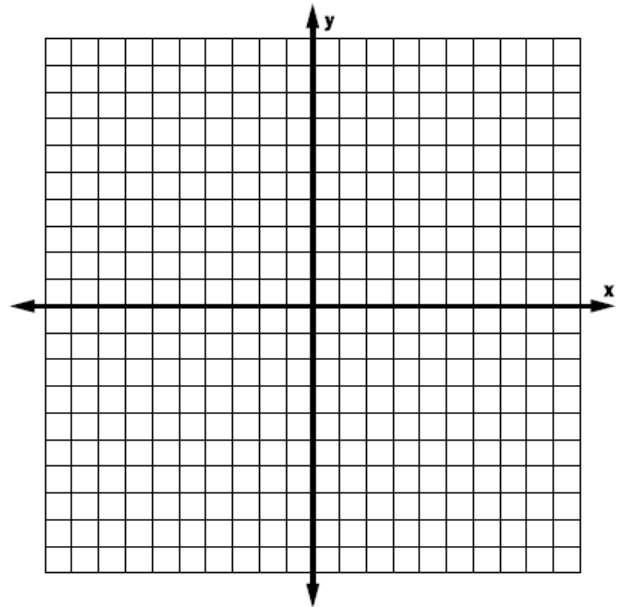


**Rotation:**

**1. Example:** A quadrilateral has vertices  $P(3, -1)$ ,  $Q(4, 0)$ ,  $R(4, 3)$ , &  $S(2, 4)$ . Rotate PQRS  $180^\circ$  counterclockwise about  $(0, 0)$  and name the coordinates of the new vertices.

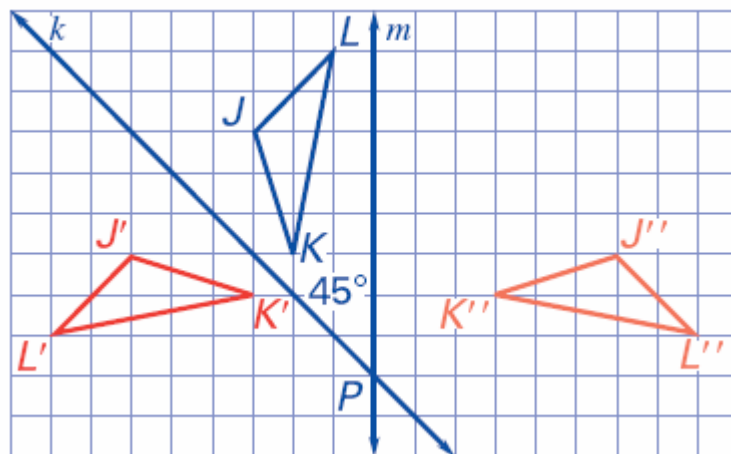
**2. Guided Practice:**  $\triangle RST$  has coordinates  $R(-2, 3)$ ,  $S(0, 4)$ , &  $T(3, 1)$ . If  $\triangle RST$  is rotated  $90^\circ$  clockwise about the origin, what are the coordinates of the new vertices?



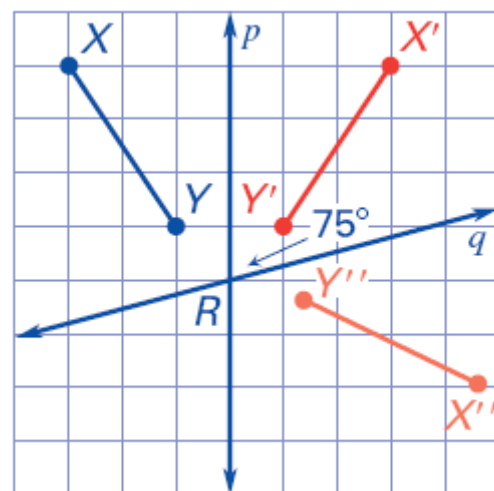
### Composite Reflection.

<http://watertowngeometry.wikispaces.com/Unit+7+Notes>

**3. Example:**  $\triangle JKL$  is reflected in line  $k$  to produce  $\triangle J'K'L'$ . This triangle is then reflected in line  $m$  to produce  $\triangle J''K''L''$ . Describe the transformation that maps  $\triangle JKL$  to  $\triangle J''K''L''$ .



**4. Guided Practice:** In the diagram,  $\overline{XY}$  is reflected in line  $p$  to produce  $\overline{X'Y'}$ . This segment is then reflected in line  $q$  to produce  $\overline{X''Y''}$ . Describe the transformation that maps  $\overline{XY}$  to  $\overline{X''Y''}$ .



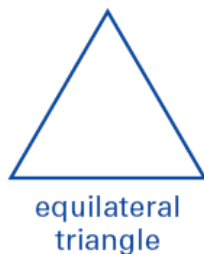
### Rotational Symmetry:

**Examples.** Which figures have rotational symmetry? For those that do, describe the rotations that map the figure onto itself.

5.

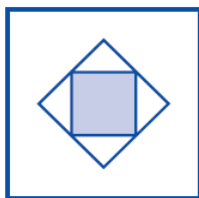


6.

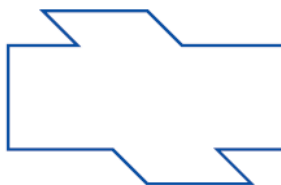


Explain how the design can be mapped onto itself by a rotation.

7.



8.

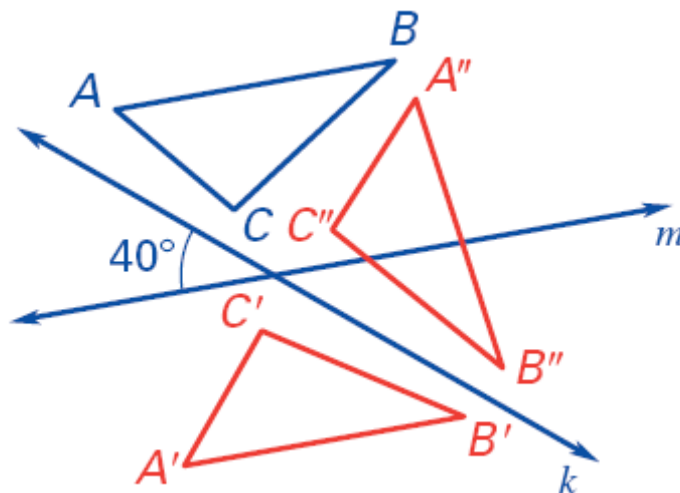


### Guided Practice.

9. Do the initials **SHS** have rotational symmetry? If so, explain how the design can be mapped onto itself by a rotation.

10. \_\_\_\_ Find the angle of rotation that maps  $\triangle ABC$  onto  $\triangle A''B''C''$ .

- A.  $20^\circ$
- B.  $40^\circ$
- C.  $60^\circ$
- D.  $80^\circ$
- E.  $120^\circ$



11. What is a center of rotation?

12. Lines  $m$  and  $n$  intersect at  $Q$  to form a  $30^\circ$  angle. If a pentagon is reflected in  $m$ , then in  $n$  about  $q$ , What is the angle of rotation of the pentagon?

